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Congenital Cardiology Solutions

LEFT ATRIAL VOLUME IN ADULTS WITH RESTRICTIVE VENTRICULAR SEPTAL DEFECT

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Background: Adults with a restrictive ventricular septal defect (VSD) are felt to have a good prognosis. The distinction between small and moderate defects is based upon the presence of left atrial (LA) and left ventricular (LV) enlargement by echo. Recent studies have shown that LA size is more accurately assessed using LA volume compared with LA diameter and increases in LA volume are associated with a higher incidence of cardiac events in adults including atrial fibrillation.

Hypothesis: In patients (pts) with restrictive VSDs, we sought to evaluate: (1) the relationship between LA diameter and LA volume index (LAVI) and (2) predictors of LA volume enlargement.

Methods: We reviewed the echocardiograms of all adults with a non-operated restrictive VSD at our adult congenital heart center. We excluded pts who had more than mild mitral regurgitation or LV hypertrophy and pts with coarctation of the aorta. LAVI was calculated using area-length method from both apical 2- and 4-chamber views. LAVI was defined as: normal 18-28 cc/m2; mild 29-33 cc/m2; moderate 34-39 cc/m2 and severely dilated > 40 cc/m2. LV end diastolic dimension was indexed to BSA (LVEDDI).

Results: There were 63 pts; 49% male with a mean age of 38 years. The VSD was perimembranous in 57 of 63 pts (90%), and supracristal in 6 pts (10%). LVEDDI was normal in 54 of 63 pts (86%). LA diameter was normal in 42 of 63 pts (67%). In contrast, LAVI was at least mildly increased in 43 of 63 pts (68%) and moderate or severely increased in 32 of 73 pts (51%). There was a poor correlation between the LA diameter and LAVI (R2 =0.24). There was no significant difference in age, gender, BSA, systolic blood pressure, incidence of LVH or VSD type between pts with moderate or more LA enlargement (LAVI >33 cc/m2) compared with normal or mild LA enlargement. When compared to those with LAVI <33 cc/m2, those with larger LA volumes had larger LVEDDI (2.51 vs 2.94 cm/m2, p=0.0008).

Conclusions: Measurement of LA volume in adults with restrictive VSD shows moderate or severe LA enlargement in 51% of pts. LA volume correlates poorly with LA dimension but is related to degree of LVEDDI. Late followup is needed to determine the clinical significance of LA enlargement in adults with restrictive VSDs.